STATUS OF IOTC DATABASES FOR ALBACORE

IOTC Secretariat

Abstract

This document reviews the status of the information available on Albacore in the databases at the IOTC Secretariat. The review covers data on nominal catches, catch-and-effort, and size-frequency data.

Catch trends

Albacore (**Annex I**: **Table 1, Table 2, Fig. 5**) are caught almost exclusively under drifting longlines (98%), with remaining catches recorded under purse seines (2%) and other gears (**Fig. 2**). A fleet using drifting gillnets targeting Albacore operated in the Indian Ocean between 1985 and 1992 harvesting important amounts of this species. This fleet, from Taiwan,China, had to stop fishing in 1992 due to a worldwide ban on the use of drifting gillnets. Albacore are currently target species or bycatch of industrial longline fisheries and bycatch of other fisheries.

The catches of Albacore increased rapidly during the first years of the fishery, remaining more or less stable until the mid-1980s, besides the very high catches recorded in 1973, 1974 and 1982. The catches increased dramatically during the following decade due to the use of drifting gillnets, with total catches recorded amounting to about 30,000 t. Dramatic increases in the catches have been recorded since 1993, after the drop recorded in 1992 and 1993 as a consequence of the end of the drifting gillnet fishery in the Indian Ocean. Current catch levels are above 40,000 t.

The catches of Albacore of industrial longliners from **Japan** (**Fig. 1**) increased proportionally to those of yellowfin tuna, target species of this fleet during the first years of the fishery. Further increases in the catches of Albacore are noted between 1958 and 1964, as a consequence of the increasing demand for Albacore from American canning factories during this period. The catches remained more or less stable until the late-sixties, dropping after this year to values around 2,000 tonnes and having remained stable during the last three decades.

Average catches of Albacore and major species per quarter and per 5 degree square area for Japanese and Taiwanese fisheries fleet between 1994 and 2001 and total catches for 2001 and 2002 are shown in **figure 6 to 11**. The majority of the Albacore is caught under longlines between 30 and 40 degrees south during the second and third quarter.

Figure 1: Catches of Albacore per fleet and year recorded in the IOTC Database (1963-2002)

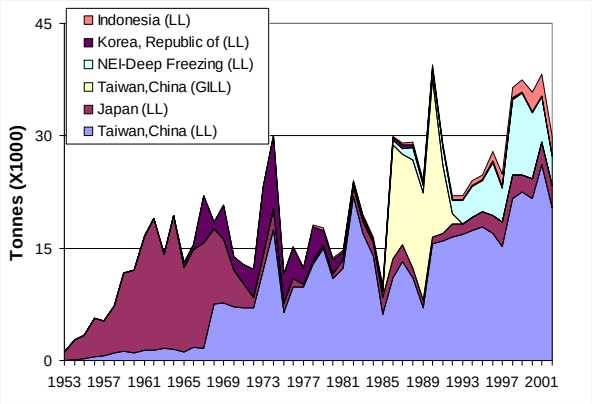
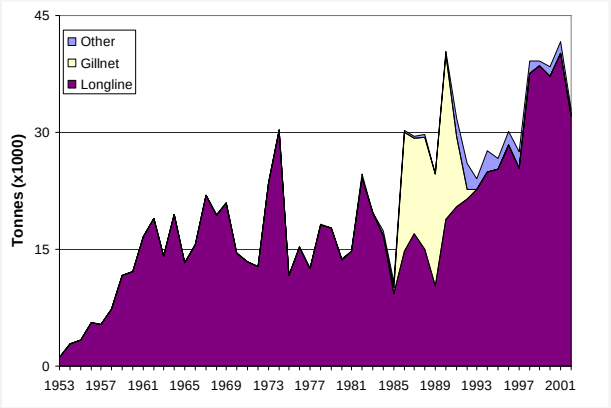


Figure 2: Catches of Albacore per gear and year recorded in the IOTC Database (1963-2002)



Note that the catches series estimated during 2003 include catches assigned to each species after allocation of species aggregates to individual species by the Secretariat (2002 catches series only accounted for catches recorded under individual species in the IOTC database).

The high catches recorded under drifting gillnets from Taiwan,China between 1986 and 1991, are shown **Figure 12** and catches under purse seiners are shown **Figure 13**.

Longliners from **Taiwan,China** have been operating in the Indian Ocean since 1954, with low catches of Albacore recorded until 1967. Catches around 10,000 t were recorded in the following three decades, besides the two peaks recorded in 1974 and 1982, with catches reaching the 20,000 t. A dramatic increase in the catches of Albacore has been noted since then, with current catches amounting to more than 25,000 t.

The catches of Albacore of longliners from the **Republic of Korea**, recorded since 1965, have never been above 10,000 t. The highest catches were recorded in 1974 coinciding with the peak catches recorded for longliners of Taiwan,China and Japan. Current catches of this species are very low.

Other fleets for which important catches of Albacore have been recorded in recent years are a fleet of fresh-tuna longliners operating in **Indonesia**, with catches recorded around 3,000 t, and a fleet of deep-freezing longliners operating under flags of non-reporting countries (**NEI-Deep freezing**), with current catches of Albacore between 5,000 t and 10,000 t.

Nominal Catch (NC) Data

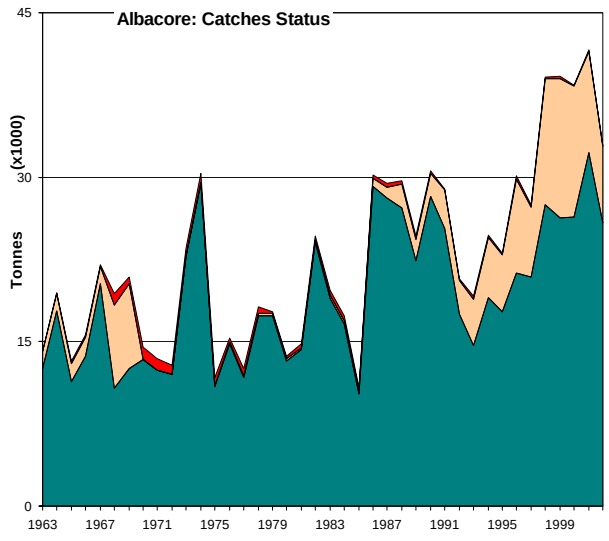
The catches of Albacore recorded in the IOTC databases are thought to be complete, at least until the mid-1985s. The fleets for which the majority of the catches of Albacore are recorded have always reported good catch statistics to the IOTC. The catches of Albacore recorded for Illegal and/or Unregulated and/or Unreported (IUU) fleets (recorded as NEI- in the IOTC Database), which have been operating in the Indian Ocean since the early 1980s, have always been estimated by the Secretariat.

Unreported catches: The quality of the catches recorded for non-reporting deep-freezing Longliners (NEI-DFRZ) is thought poor due to the scarce information available on their activities (only the total number of vessels operating per year is available in most

cases). The catches have always been estimated according to the average catches and species composition recorded for Longliners of Taiwan,China in the Indian Ocean, on the assumption that both fleets operate in the same way. This is supported by the data gathered at the IOTC Secretariat regarding the names, characteristics and ownership information of NEI-DFRZ vessels (Vessel Record Database), which tends to indicate that most of these vessels are from Taiwan,China. The drop in the catches of NEI-DFRZ Longliners occurred since 2000 is proportional to a decrease in the number of vessels recorded in the IOTC database. The reason for this decrease it not fully known, although it is likely that this is, at least partially, a consequence of re-flagging of NEI-DFRZ Longliners to flags of reporting countries, mainly Philippines and Seychelles. The catches recorded for those countries, however, have not increased proportionally to the increase in the number of vessels.

Fresh tuna longline fleet: The catches of several fresh tuna longline fleets (NEI-Fresh Tuna) operating in the Indian Ocean (Thailand, Malaysia, Sri Lanka and Maldives) are also thought uncertain in years prior to 1992. These are thought more accurate in recent years thanks to the implementation of sampling programs in some of these countries to monitor its activities. The catches of fresh-tuna longliners of Indonesia are likely to be underestimated, especially in recent years. This is supported by the information collected during the first year of sampling[1] in several ports in Indonesia, where high catches of the species have been recorded. The data collected will be analyzed soon and the catches updated accordingly.

Figure 3: Catches status of Albacore (1963-2002)



Legend:

- The catches available referred to species aggregates not having the Secretariat enough information to assign them to individual species (catches aggregates broken into species for the Working Party)
- The catches available referred to species aggregates having the Secretariat enough information to assign them to individual species (catches aggregates broken and data input to IOTC Nominal Catches database under individual species)
- The catches available refer to individual species

Catches uncertain: Catches of tunas and tuna-like species are sometimes reported aggregated[2]. The Secretariat estimates the species and gear composition of these

[1] Multilateral catch monitoring: Directorate General of Capture Fisheries Indonesia, Research Institute for Marine Fisheries Indonesia, CSIRO Australia, ACIAR Australia and IOTC/Overseas Fisheries Co-operation Foundation of Japan

[2] This is the case notably when data are not reported to the Secretariat and have to be taken from the FAO nominal catch database.

aggregates on the basis of all information available but the accuracy of the estimates is thought low for fisheries poorly or not at all documented (**Fig.3**).

Catch-and-Effort (CE) Data

Catch and effort data are fully or almost fully available up to the early 90s but only partially available since then (**Figure 4**), due to the almost complete lack of catch and effort records from IUU and the Indonesian longline fleet. The catch and effort series data recorded for Taiwan,China do not include catches between 20-30 degrees East.

The effort statistics are thought good quality for most of the fleets for which long catches series are available, with the exception of Taiwan,China (1990-92) and the whole series for the Republic of Korea and Philippines. The use of data for these countries is, therefore, not recommended.

Size Frequency Data

For longline fisheries size frequency data is only available since 1964. Japan is the only country that has been reporting size-frequency data on a regular basis. Nevertheless, in recent years, the number of specimens measured is very low in relation to the total catch and has been decreasing year by year. The size-frequency statistics available from the two other main longline fleets are either very incomplete (Taiwan,China for which only four years are available) or inaccurate (Republic of Korea), which invalidates their use.

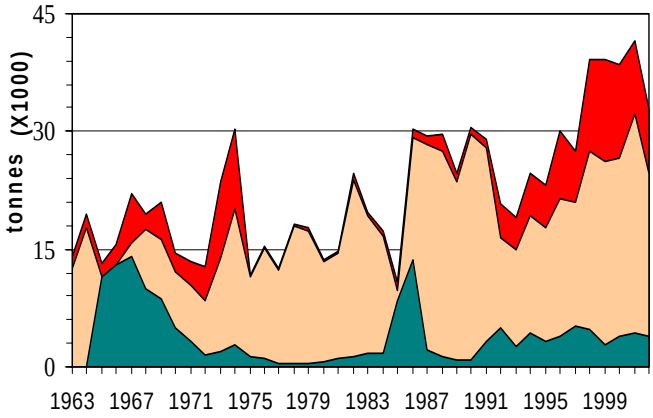
Figure 4: Amount of catches (NC) of Albacore for which catch and effort data (CE) or size frequency data (SF) are available

Legend:

Total Catch (Nominal Catch NC)

Amount of catch for which Catch and Effort (CE) are available

Amount of catch for which Size Frequency (SF) are available



Note that the catches series estimated during 2003 include catches assigned to each species after allocation of species aggregates to individual species by the Secretariat (2002 catches series only accounted for catches recorded under individual species in the IOTC database).

The recovery of size data from port sampling regarding fresh tuna longline fleets operating in Phuket, Penang, Sri Lanka and, recently Indonesia, continued in 2002 and 2003, with many specimens of Albacore measured. Size data for the species is also available for European purse seiners.

In general, the amount of catch for which size data for the species are available has been very low (**Fig. 4**) and the amount of specimens measured per strata are considered very low. The quality of this dataset is, therefore, thought poor.

Other Biological Data

Table 3 shows the biological data available for the Albacore at the IOTC Secretariat. The information collected through sampling in different ports of the Indian Ocean, currently under review, will be added soon.

Source	Area	Year	Sex	Season	Gear	Type	a	b	r	n	min	max
Reefbase	Ionian Sea	1989-93	F	AUT	HOOK	FL	0.0965	2.6	0.9539	227	53	122
Reefbase	Equatorial Western Indian Ocean						0.0119	2.627				
Reefbase	Hellenic Seas	1989-93		AUT	HOOK	FL	0.0658	2.69	0.93	2932	44	122
Reefbase	Aegean Sea	1989-93	M	AUT	HOOK	FL	0.0529	2.75	0.9849	598	60.2	88
Reefbase	Indian Ocean					FL	0.0057	2.751				
Reefbase	Ionian Sea	1989-93	M	AUT	HOOK	FL	0.0488	2.76	0.9	214	59	84
Reefbase	Aegean Sea	1989-93	F	AUT	HOOK	FL	0.0453	2.79	0.94	257	57.9	86
Reefbase	Hellenic Seas	1986			HOOK	FL	0.0418	2.8	0.97	868	55	81.1
Reefbase	Bay of Biscay						0.0257	2.877				
Reefbase	Aegean Sea	1986-87; 89			HOOK	FL	0.0312	2.88	0.9798	1742	55.5	89
Reefbase	Mediterranean coast					FL	0.0147	3.009			32	88
Reefbase	South African Study					FL	0.009	3.21				
Reefbase	South African Study						0.063	3.28				
ICCAT	North Atlantic						1.339	3.107				
ICCAT	South Atlantic						1.3718	3.0973				

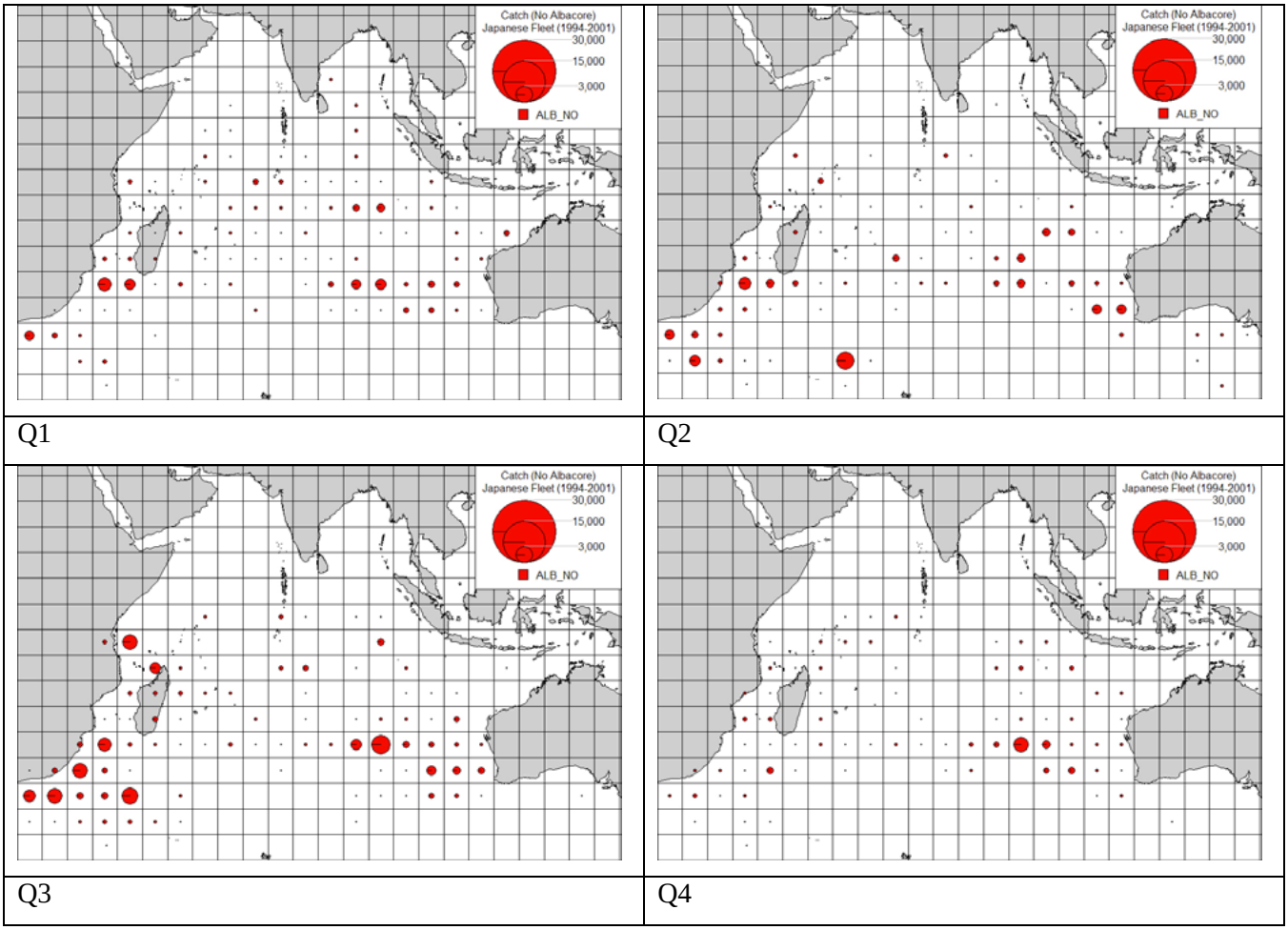
Table 3: Length-weight relationship **(W=aL^b)** for Albacore

Data related issues for Albacore

A number of problem areas were identified in the data situation for Albacore:

- Lack of size-frequency data from the Republic of Korea and Philippines, Taiwan,China since 1989 and low sample sizes for the Japanese longline fleet.
- Lack of Catch and Effort statistics from Taiwan,China since 2000 and lack of data between 20-30 degrees East for the whole series.
- Poor knowledge of the catches, effort and size-frequency from fresh tuna longline vessels, especially from Taiwan,China and several non-reporting fleets.
- Poor knowledge of the catches, effort and size-frequency from non-reporting fleets of deep-freezing tuna longliners, especially since the mid-eighties.
- Lack of accurate catch, effort and size-frequency data for the Indonesian longline fishery in recent years.
- Poor knowledge of the catches, effort and size-frequency data for non-reporting purse seiners.

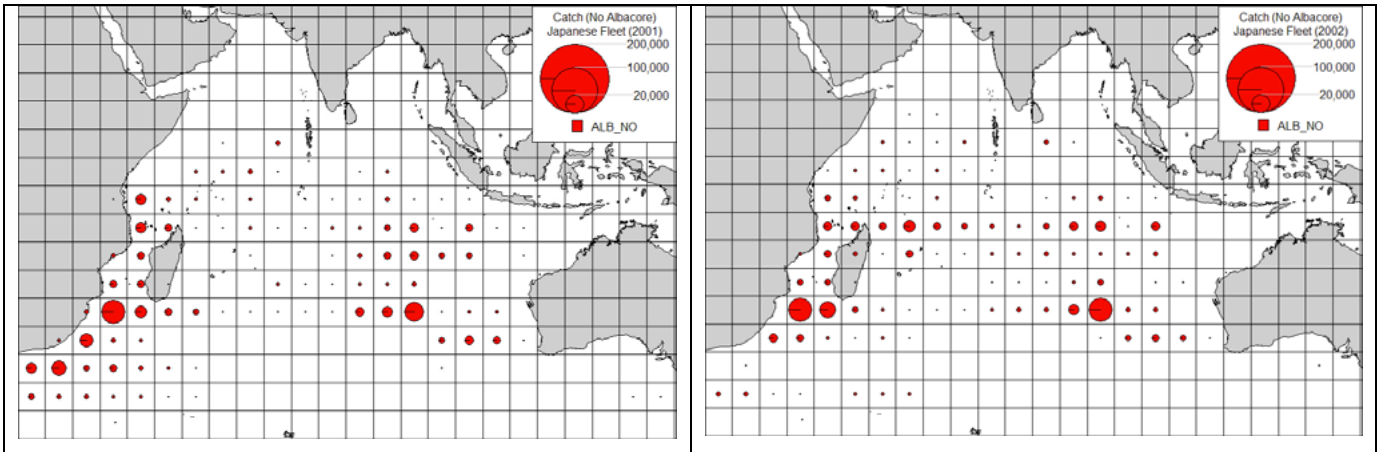
Figure 6: Average catches of Albacore (number of fish) per quarter and per 5 degree area square for the Japanese fleet by quarter (1994-2001)



Q1 | Q2

Q3 | Q4

Figure 7: Catches of Albacore (number of fish) per 5 degree square area for the Japanese fleet in 2001 and 2002



Japanese fleet 2001 | Japanese fleet 2002

Figure 8: Average catches of Albacore (number of fish) per quarter and per 5 degree square area for the Taiwanese fleet (1994-2001)

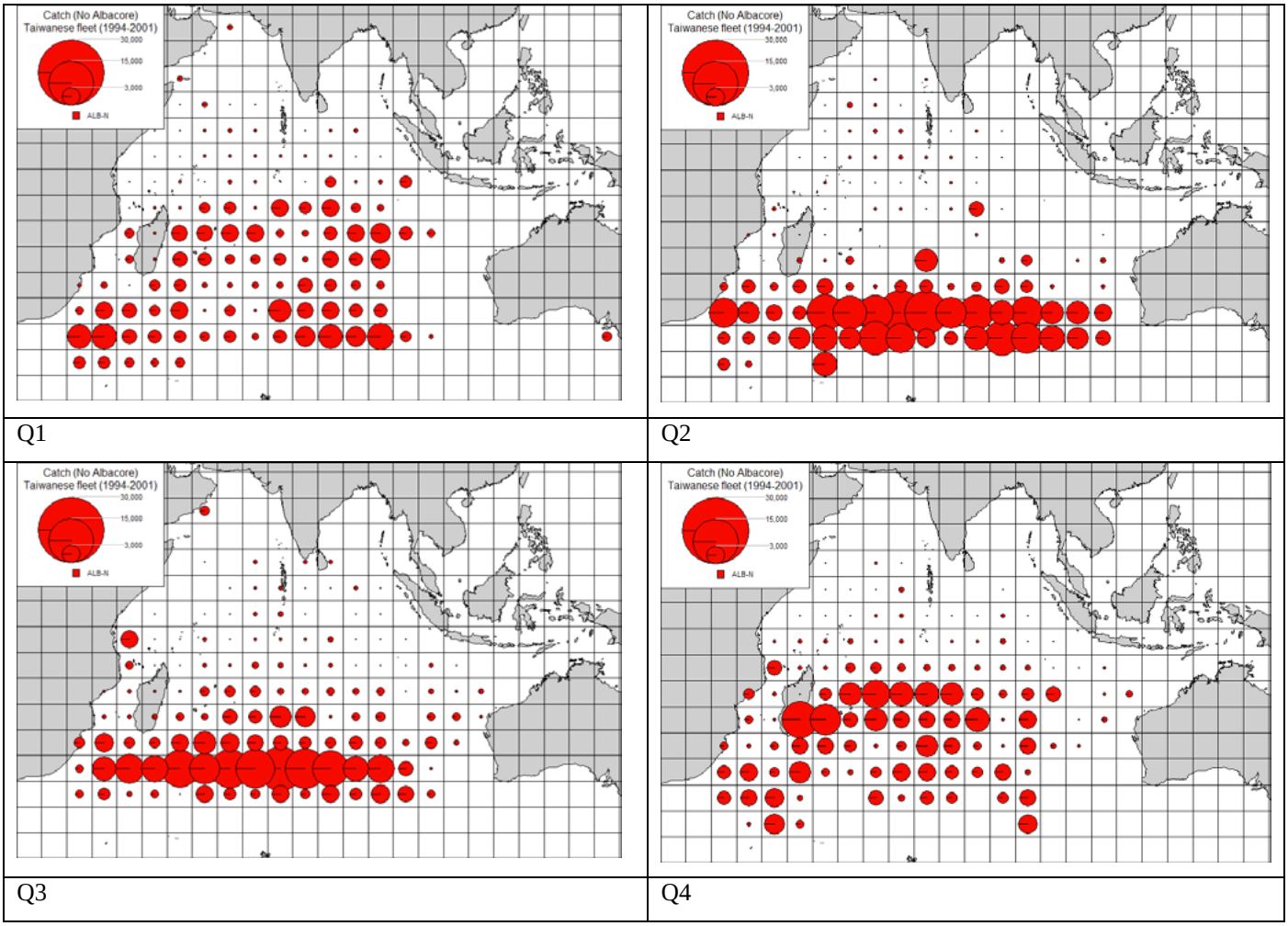
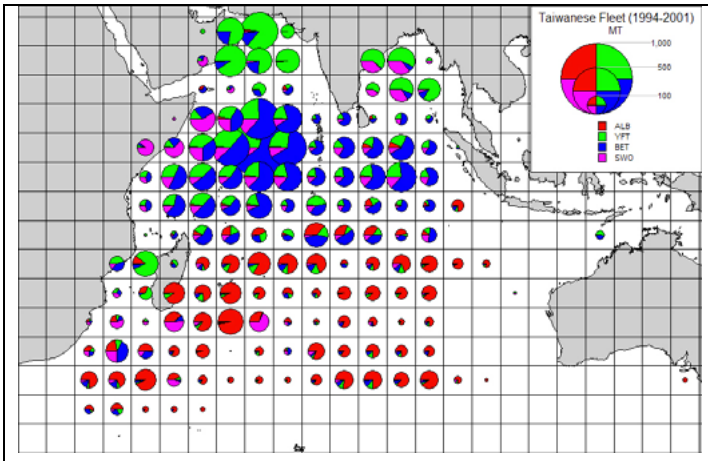
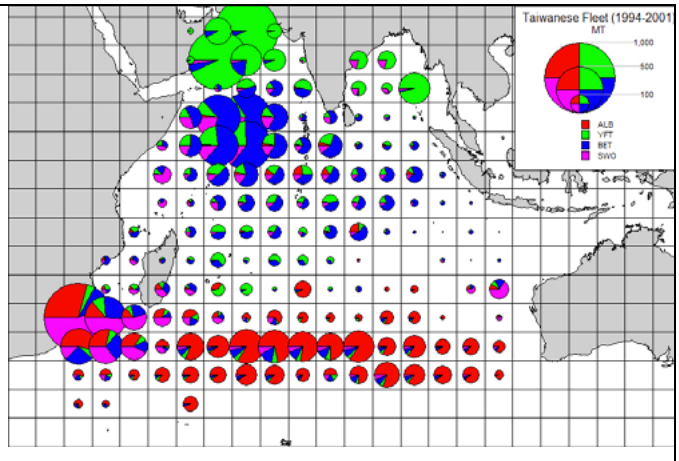


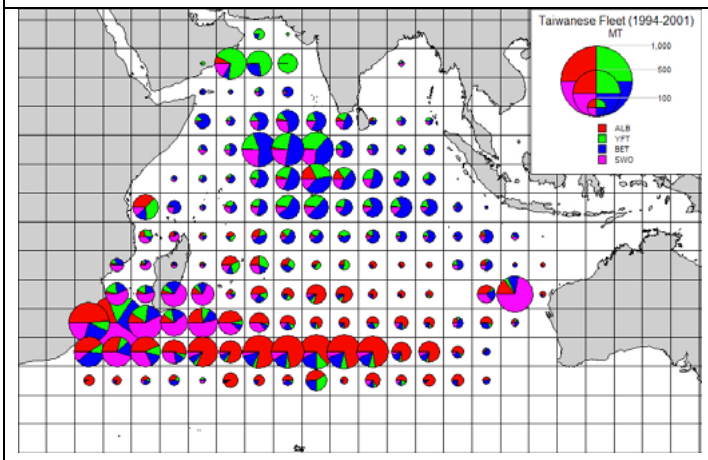
Figure 9: Average catches (in MT) of Albacore, yellowfin tuna, bigeye tuna and swordfish per quarter and per 5 degree square area for the Taiwanese fleet (1994-2001)



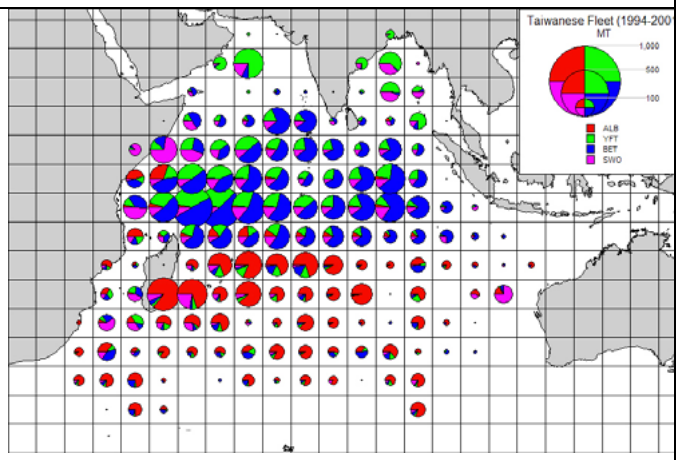
Q1



Q2



Q3



Q4

Figure 10: Catches (in MT) for Albacore, yellowfin tuna, bigeye tuna and swordfish per 5 degree square area of the Taiwanese fleet in 2001 and 2002.

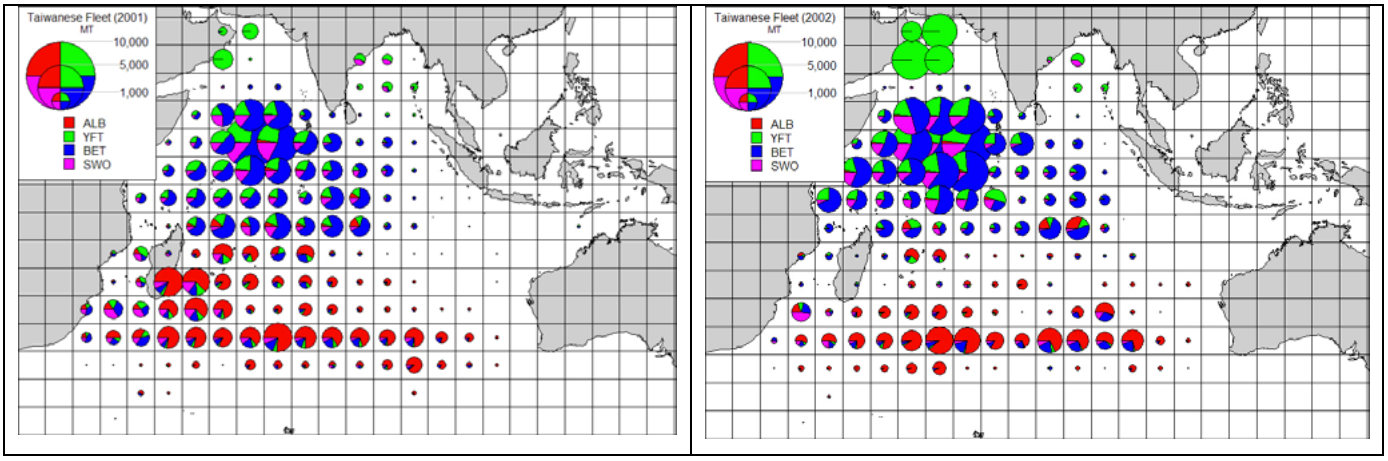


Figure 11: Catches of Albacore (number of fish) per 5 degree square area for the Taiwanese fleet in 2001 and 2002.

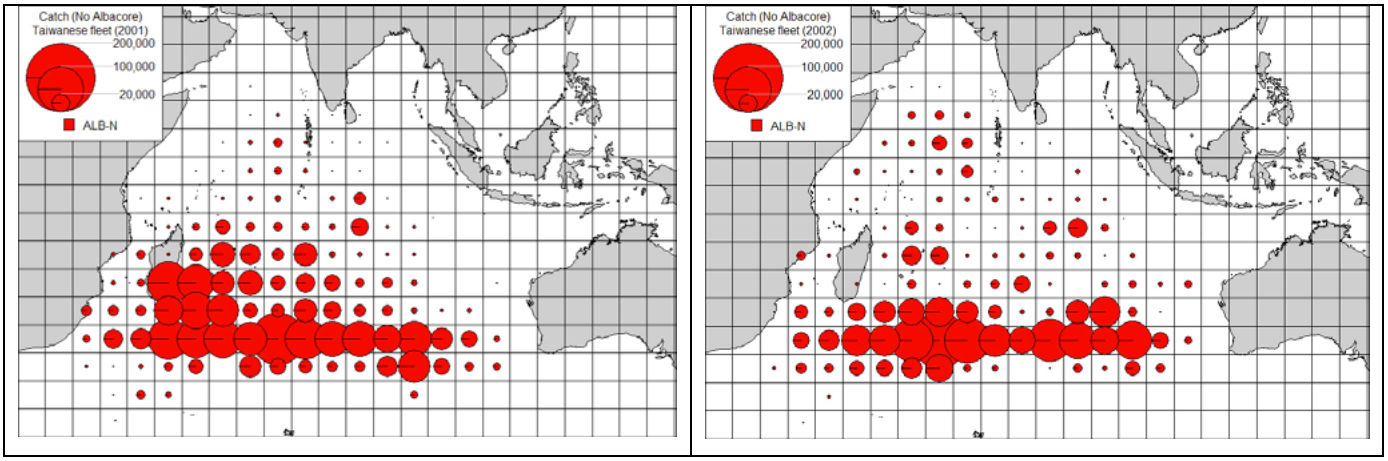


Figure 12 (left): Catches of Albacore per 5 degree square area n between 1991 and 1999 (Purse Seine EC)

Figure 13 (right): Average Catches of Albacore per 5 degree square area in the Indian Ocean between 1986 and 1991 (Gillnet Taiwan,China)